

Remarks

Claims 1-56 are pending in this application. Claim 11 has been amended to incorporate the subject matter of claim 1 and put claim 11 in condition for allowance. Claim 39 has been amended to incorporate the subject matter of claim 29 and put claim 39 in condition for allowance.

Claims 21 and 49 stand rejected under 35 U.S.C. 102(e) as being anticipated by Thomas (U.S. Pub. No. 2003/0086140). These claims are believed to be patentable.

Independent claims 21 and 49 recite a first token bucket using tokens to regulate the packet flow in terms of packet rate and a second token bucket using tokens to regulate the packet flow in terms of data rate such that a particular packet is subjected to handling in accordance with both the first token bucket and the second token bucket, in combination with other limitations. Thomas describes processing downstream packets of an optical network. Figure 5 does illustrate a policer 564 that may utilize first and second token bucket algorithms. For example, blocks 635 and 640 of Figure 6 illustrate regulation based on peak rate, and based on sustained rate/burst size. Nevertheless, the various arrangements in Thomas fail to teach or even suggest the claimed subject matter. The Examiner refers to page 14, section 163. This section specifically notes that both token buckets in Thomas regulate the flow in terms of data rate (9 Mb/s and 6 Mb/s). The Examiner also directs attention to page 9, section 95. This section describes processing with the first and second token bucket algorithms in Thomas. As pointed out above, although Thomas does describe first and second token bucket algorithms, these teachings do not suggest the claimed subject matter wherein packet flow is regulated in terms of packet rate and data rate by first and second token buckets.

In response to Applicants' arguments, the Examiner states that Thomas clearly discloses a received packet being handled by peak data rate and sustained rate or burst size of packet of the first token and second token buckets.

Applicants respectfully point out that claims 21 and 49 each recite “wherein the first token bucket uses tokens to regulate packet flow in terms of packet rate and wherein the second token bucket uses tokens to regulate the packet flow in terms of data rate such that a particular packet is subjected to handling in accordance with both the first token bucket and the second token bucket.” Both token buckets in Thomas regulate the flow in terms of data rate. Thomas does not describe the claimed subject matter including regulating packet flow in terms of packet rate by a first token bucket and data rate by a second token bucket, but only describes first and second algorithms that both regulate the data rate.

In response to Applicants’ arguments, the Examiner specifically noted Thomas’s description of peak data rate and sustained data rate or burst size. Applicants respectfully point out that these both describe regulating in terms of data rate. The claimed invention, on the other hand, describes regulating packet flow in terms of data rate **and** in terms of packet rate. Thomas does not describe these claimed features in the claimed combinations.

For reasons given above, claims 21 and 49 are believed to be patentable.

Claims 1-4 and 29-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fichou (U.S. Patent No. 6,118,791) in view of Bashandy (U.S. Patent No. 6,950,395).

Regarding claims 1 and 29, these claims currently recite combinations including handling packets destined for the subscriber in accordance with the token bucket configuration, including determining conformance of network traffic destined for the subscriber, and dynamically adjusting the token bucket configuration for the token bucket associated with the subscriber based on the demand to affect the way that packets arriving at the regulator are handled.

Fichou describes an adaptive bandwidth allocation method for non-reserved traffic in a network. In more detail, Fichou is about matching traffic to the network. As

exemplified in Figure 3, leaky bucket 32 received packets from a user, regulates the traffic and sends non-discarded packets to the network. As exemplified in Figure 4 and described in column 6, lines 25-54, the leaky bucket mechanism including two token pools. The green token pool is for reserved traffic while the red token pool is for non-reserved or discardable traffic. Fichou describes adaptive computation of $R_{k,t}$, the token (fill) rate of the red token pool.

However, claims 1 and 29 recite handling packets destined for the subscriber including determining conformance of network traffic destined for the subscriber. In contrast, Fichou describes handling packets from the user and destined for the network. Further, Fichou uses the leaky bucket to regulate the traffic by matching traffic for the user to the network, which is far different than the claimed feature of determining conformance of network traffic destined for the subscriber. To the extent that Fichou does describe an adaptive token fill rate, Fichou only describes adapting a parameter of a leaky bucket matching traffic from the user to the network, as opposed to dynamic adjustment of a token bucket configuration for a token bucket that determines conformance of network traffic destined for the subscriber.

The Examiner has acknowledged that Fichou fails to disclose the token bucket determining conformance of network traffic destined for the subscriber to allow action to be taken in a presence of non-conforming network traffic. In making the current rejection, the Examiner relies on Bachandy as a secondary reference. According to the Examiner, Bashandy disclosed a token bucket determining conformance of network traffic destined for a subscriber to allow action to be taken in a presence of non-conforming network traffic. The Examiner goes on to state that it would have been obvious to one of ordinary skill in the art at the time that the invention was made to apply teachings of Bashandy into the teachings of Fichou to achieve the claimed invention. The Examiner states that the motivation would have been to improve throughput of the system and prevent global congestion.

Applicants believe that there is no motivation to combine teachings of Fichou and Bashandy to achieve the claimed invention. The deficiencies of Fichou have been

acknowledge by the Examiner. Regarding Bashandy, Bashandy does describe a delayed filling scheme for a token bucket. However, more specifically, Bashandy describes a token bucket meter. Bashandy describes problems with existing token bucket implementations, and, in particular, mentions a need for implementing a token bucket scheme that does not rely on a real-time multiply operation to determine the number of tokens to add to the bucket during filling. Bashandy goes on to describe a token bucket implementation that uses a delayed filling scheme.

However, Bashandy fails to describe or suggest dynamic adjustment of the token bucket configuration for the token bucket associated with the subscriber based on demand to affect the way that packets arriving at the regulator are handled, as claimed.

There is no motivation to combine teachings of Fichou and Bashandy to achieve the claimed invention. Fichou is about matching traffic to the network, handling packets from the user destined for the network, using a leaky bucket to match traffic from the user to the network, and adaptive computation of the token fill rate for a token pool for discardable traffic. Fichou is concerned with traffic entering the network, and matching the traffic to the network.

On the other hand, Bashandy is about token buckets, metering or policing traffic, and, in particular, is about a delayed filling scheme for the token bucket. The token bucket for Bashandy is concerned with, as noted by the Examiner, conformance.

If the token bucket of Bashandy were incorporated into Fichou, this would change the principle of operation in Fichou. More specifically, Bashandy's token bucket is used to determine the conformance or non-conformance of packets, and does not match traffic to the network. In Bashandy, non-conforming packets are dropped or marked as non-conforming. There is no matching of traffic to the network. Fichou is specifically directed to matching traffic to the network, with the leaky bucket. By modifying Fichou in the way proposed by the Examiner, Fichou would no longer operate to match traffic to the network.

Accordingly, such a modification would make Fichou no longer operate for the intended purpose and there can be no motivation to make such a modification.

For reasons given above, claims 1 and 29 are believed to be patentable.

Claims 2-4 and 30-32 are dependent claims and are also believed to be patentable.

Claims 9-10, 13, 37-38, and 41 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fichou and Bashandy in view of Shorey (U.S. Patent No. 6,829,649). These claims are dependent claims and are also believed to be patentable. Claims 5-8, 14-17, 20, 33-36, 42-45, and 48 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fichou in view of Bashandy, and further in view of Wang (U.S. Patent No. 6,748,435). Claims 5-8, 14-16, 33-36, and 42-44 are dependent claims and are also believed to be patentable.

Claims 5-8, 14-17, 20, 33-36, 42-45, and 48 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fichou in view of Bashandy, and further in view of Wang (U.S. Patent No. 6,748,435). Claims 5-8, 14-16, 33-36, and 42-44 are dependent claims and are also believed to be patentable.

Claims 17 and 45 recite, in combination with other limitations, handling packets destined for the subscriber, including determining conformance of network traffic destined for the subscriber, and dynamically adjusting the token bucket configuration. Wang does describe random early demotion, but fails to overcome the deficiency of the primary reference, Fichou, and the secondary reference, Bashandy. Claims 20 and 48 are dependent claims and are also believed to be patentable.

Claims 18-19 and 46-47 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fichou, Bashandy, and Wang, and further in view of Shorey. These claims are dependent claims and are also believed to be patentable.

Claims 23-27 and 51-55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shorey in view of Jeffries (U.S. Pub. No. 2004/0062259). Independent claims 32 and 51 recite “the amount of tokens to be removed being based on the amount of the flow and being further based on a classification of the flow,” in combination with other limitations. Claims 24-27 and 52-55 are dependent claims. Jeffries describes bandwidth dependent variation of the token increment rate. The Examiner refers to page 1, section 3. This section only describes general token bucket operation, and fails to suggest the claimed invention. In more detail, Jeffries describes varying the token increment rate in dependence on the bandwidth indicator. The Examiner has not pointed out any specific teaching of removing an amount of tokens based on the amount of flow and further based on a classification of the flow as recited by the claims.

Claims 28 and 56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jeffries and Shorey, and further in view of Fichou. These claims are dependent claims and are also believed to be patentable.

The Examiner has indicated that claims 11-12, 22, 39-40, and 50 contain allowable subject matter. Applicants respectfully request that the Examiner reconsider this application, and allow claims 1-56.

The amount of \$520 is enclosed to cover the \$120 fee for a one-month extension of time and the \$400 fee for the additional two independent claims. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,
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